

Application Number: 10/531,324  
Amendment Dated: August 18, 2010  
Reply to Office Action of: February 18, 2010

### ***AMENDMENT TO THE CLAIMS***

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously presented) A compound, represented by the general formula



or a physiologically acceptable salt, or an isomer or stereoisomer, wherein:

A is a radical selected from one of the formulae Y, YR<sup>1</sup>, R<sup>1</sup>Y, R<sup>1</sup>YR<sup>4</sup>, R<sup>1</sup>OY, YOR<sup>1</sup>, R<sup>1</sup>YOR<sup>2</sup> or R<sup>1</sup>OYOR<sup>2</sup>;

W is a radical of the formulae R<sup>3</sup>Q or a C4 to C7 non-aromatic heterocycle containing a nitrogen heteroatom wherein said heterocycle consists of at least one heteroatom independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups;

Y is a carbocyclic ring, a carbocyclic ring consisting of at least one substituent group, a fused bicyclic ring system, a fused bicyclic ring system consisting of at least one substituent group, a bridged bicyclic ring system, a bridged bicyclic ring system consisting of at least one substituent group, a bridged tricyclic ring system, a bridged tricyclic ring system consisting of at least one substituent group;

X is a valency bond, a methylene group (–CH<sub>2</sub>–) or a heteroatom selected from nitrogen, oxygen, sulfur;

R<sup>1</sup> is a C5 to C18 alkylidene group or C5 to C18 alkyl group, any possible member selected from a substituted or unsubstituted carbocyclic ring having about 3 to about 7 ring members, an about C3 to about C20 saturated, straight or branched, aliphatic hydrocarbon chain, an about C3 to about C20 unsaturated

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straight or branched, aliphatic hydrocarbon chain having 4 or fewer double bonds, an about C3 to about C20 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain consisting of one or more independently chosen heteroatoms, an about C3 to about C20 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain consisting of at least one independently chosen possible member selected from a carbocyclic ring having about 4 to about 7 ring members, or any above member consisting of a substituent group on at least one available ring atom, or any above about C3 to about C20 hydrocarbon chain having at least one independently chosen substituent group;

$R^2$  is any possible member selected from a substituted or unsubstituted carbocyclic ring having about 3 to about 7 ring members, an about C2 to about C5 saturated, straight or branched, aliphatic hydrocarbon chain, an about C3 to about C20 unsaturated straight or branched, aliphatic hydrocarbon chain with 4 or fewer double bonds, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain consisting of one or more independently chosen heteroatoms, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain consisting of at least one independently chosen possible member selected from a carbocyclic ring having about 4 to about 7 ring members, or any above member consisting of a substituent group on at least one available ring atom, or any above about C2 to about C5 hydrocarbon chain having at least one independently chosen substituent group;

$R^3$  is any possible member selected from a carbocyclic ring having about 3 to about 9 ring members, a heterocyclic ring having about 4 to about 9 ring members, an aromatic ring having about 5 to about 9 ring members, a heteroaromatic ring having about 5 to about 9 ring members; any above group consisting of a substituent group on at least one available ring atom, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain, an about C2 to about C5 saturated or unsaturated, straight or branched,

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aliphatic hydrocarbon chain consisting of one or more independently chosen heteroatoms, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain consisting of at least one independently chosen possible member selected from a carbocyclic ring having about 4 to about 7 ring members, a heterocyclic ring having about 4 to about 7 ring members, an aromatic ring having about 5 to about 7 ring members, a heteroaromatic ring having about 5 to about 7 ring members; or any above member consisting of a substituent group on at least one available ring atom, or any above about C2 to about C5 hydrocarbon chain having at least one independently chosen substituent group;

$R^4$  is any group independently selected from  $R^1$  or  $R^2$ ; and

Q is an ammonium group, wherein said ammonium group can be substituted one or more times with a C1 to C6 alkyl radical, or is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the  $R^3$  group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups, a heterobicyclic ring containing a nitrogen heteroatom which is bonded to the  $R^3$  group, wherein said heterobicyclic ring can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterobicyclic ring can be substituted with one or more substituent groups, a heterotricyclic ring containing a nitrogen heteroatom which is bonded to the  $R^3$  group, wherein said heterotricyclic ring can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterotricyclic ring can be substituted with one or more substituent groups. Advantageously the substituent groups are independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.

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2. (Previously presented) The compound of claim 1, wherein A is  $YR^1$ ,  $R^1YOR^2$  or  $R^1OYOR^2$ .
3. (Previously presented) The compound of claim 1, wherein the W is a C4 to C7 non-aromatic heterocycle containing a nitrogen heteroatom wherein said heterocycle consisting of at least one heteroatom independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.
4. (Previously presented) The compound of claim 1, wherein X is an oxygen atom.
5. (Previously presented) The compound of claim 1, wherein  $R^1$  is an about C3 to about C20 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain consisting of a substituent group on at least one available ring atom, wherein the substituent groups are independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino, or an about C3 to about C20 unsaturated straight or branched, aliphatic hydrocarbon chain with not more than 4 double bonds, comprising a substituent group on at least one available ring atom, wherein the substituent groups are independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.
6. (Previously presented) The compound of claim 1, wherein  $R^2$  is a C2 saturated or unsaturated alkyl or alkenyl, a C2 saturated or unsaturated alkyl or alkenyl which can be substituted with one or more substituents selected from

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hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio and amino.

7. (Previously presented) The compound of claim 1, wherein R<sup>3</sup> is a C2 saturated or unsaturated alkyl or alkenyl, a C2 saturated or unsaturated alkyl or alkenyl which can be substituted with one or more substituents selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, arylalkyl, alkoxy, alkoxycarbonyl, alkylthio and amino or a C3 to C8 cycloalkyl which is bonded at C1 to the oxygen and at C2 to Q.

8. (Previously presented) The compound of claim 1, wherein Q is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the R<sup>3</sup> group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups, independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.

9. (Previously presented) The compound of claim 1, wherein R<sup>1</sup> is a C5 to C18 alkylidene group or C5 to C18 alkyl group.

10. (Previously presented) The compound of claim 1, wherein R<sup>1</sup> is pentylidene, undecylidene, dodecylidene, tetradecylidene, hexadecylidene, pentyl, undecyl, dodecyl, tetradecyl or hexadecyl groups.

11. (Previously presented) The compound of claim 1, wherein Y is a C3 to C6 carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, or a substituted bridged tricyclic ring system.

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12. (Previously presented) The compound of claim 1, wherein Y is cyclohexyl, or adamantyl.

13. (Previously presented) The compound of claim 1, wherein R<sup>2</sup> is a C2 saturated alkyl.

14. (Previously presented) The compound of claim 1, wherein Q is trimethylammonium, N-methylmorpholinio or N-methylpiperidinio.

15. (Previously presented) The compound of claim 1, wherein:

A is R<sup>1</sup>YOR<sup>2</sup>;

W is R<sup>3</sup>Q;

X is oxygen;

Y residue is a carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, or a substituted bridged tricyclic ring system;

R<sup>1</sup> is a C12 to C18 alkylidene group or C12 to C18 alkyl group;

R<sup>2</sup> is a C2 saturated alkyl;

R<sup>3</sup> is a C2 saturated alkyl; and

Q is an ammonium group, wherein said ammonium group can be substituted one or more times with a C1 to C6 alkyl radical, or is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the R<sup>3</sup> group, wherein said heterocycle can contain one or more heteroatoms selected from nitrogen, oxygen or sulfur, and wherein said heterocycle can be substituted with one or more independently chosen substituents.

16. (Currently amended) The compound of claim 1, which is ~~at least one of one or more of~~ 1-{2-[[4-Dodecylidenecyclohexyloxy]ethyloxy]hydroxyphosphinyloxy}ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[[4-Dodecylidenecyclohexyloxy]ethyloxy]hydroxyphosphinyloxy}ethyl}-1-

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methylpiperidinium inner salt; 1-{2-[[4-Dodecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylmorpholinium inner salt; 1-{2-[[4-Tetradecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-*N,N,N*-trimethylammonium inner salt; 1-{2-[[4-Tetradecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-1-ethylpiperidinium inner salt; 1-{2-[[4-Tetradecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylmorpholinium inner salt; 1-{2-[[4-Hexadecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}- *N,N,N*-trimethylammonium inner salt; 1-{2-[[4-Hexadecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylpiperidinium inner salt; 1-{2-[[4-Hexadecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylmorpholinium inner salt; 1-{2-[[4-Dodecylcyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl -*N,N,N*-trimethylammonium inner salt; or 1-{2-[[4-Tetradecylcyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-*N,N,N*-trimethylammonium inner salt.

17. (Previously presented) The compound of claim 1 wherein
- A is YR<sup>1</sup>;
  - W is R<sup>3</sup>Q;
  - X is oxygen;
  - Y residue is a carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, a substituted bridged tricyclic ring system or an aromatic system;
  - R<sup>1</sup> is a C5 to C18 alkylidene group or C5 to C18 alkyl group;
  - R<sup>3</sup> is a C2 saturated alkyl; and

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Q is an ammonium group, wherein said ammonium group can be independently substituted one or more times with a C1 to C6 alkyl radical, or is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the R<sup>3</sup> group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen or sulfur, and wherein said heterocycle can be substituted with one or more independently chosen substituents.

18. (Currently amended) A compound of claim 16, ~~which consists of,~~ selected from 1-{2-[(5-Cyclohexylidenepentyloxy)hydroxyphosphinyloxy] ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(5-Cyclohexylidenepentyloxy)hydroxyphosphinyloxy] ethyl}-1-methylpiperidinium inner salt; 1-{2-[(5-Cyclohexylidenepentyloxy)hydroxyphosphinyloxy] ethyl}-1-methylmorpholinium inner salt; 1-{2-[(11-Cyclohexylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(11-Cyclohexylideneundecyloxy)hydroxyphosphinyloxy] ethyl}-1-methylpiperidinium inner salt; 1-{2-[(11-Cyclohexylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-1-methylmorpholinium inner salt; 1-{2-[(5-Adamantylidenepentyloxy)hydroxyphosphinyloxy]ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(5-Adamantylidenepentyloxy)hydroxyphosphinyloxy]ethyl}-1-methylpiperidinium inner salt; 1-{2-[(5-Adamantylidenepentyloxy)hydroxyphosphinyloxy]ethyl}-1-methylmorpholinium inner salt; 1-{2-[(11-Adamantylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(11-Adamantylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-1-methylpiperidinium inner salt; 1-{2-[(11-Adamantylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-1-methylmorpholinium inner salt; 1-{2-[(11-



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Cyclohexylundecyloxy)hydroxyphosphinyloxy] ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(5-Adamantylpentylloxy)hydroxyphosphinyloxy] ethyl}-N,N,N-trimethylammonium inner salt; or 1-{2-[(11-Adamantylundecyloxy)hydroxyphosphinyloxy] ethyl}-N,N,N-trimethylammonium inner salt.

19. (Previously presented) The compound of claim 1 wherein:

A is  $R^1OYOR^2$ ;

W is  $R^3Q$ ;

X is oxygen;

Y residue is a carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, a substituted bridged tricyclic ring system or an aromatic system;

$R^1$  is a C12 to C18 alkyl group;

$R^2$  is a C2 saturated alkyl;

$R^3$  is a C2 saturated alkyl; and

Q is an ammonium group, wherein said ammonium group can be independently substituted one or more times with a C1 to C6 alkyl radical, or is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the  $R^3$  group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen or sulfur, and wherein said heterocycle can be substituted with one or more independently chosen substituents.

20. (Currently amended) The compound of claim 18 which is selected from 1-{2-[[4-(Dodecyloxy)cyclohexyloxy]ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylpiperidinium inner salt, 1-{2-[[4-(Dodecyloxy)cyclohexyloxy]ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylmorpholinium inner salt, 1-{2-[[4-

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(Tetradecyloxy)cyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylpiperidinium inner salt, or 1-{2-[[4-(Tetradecyloxy)cyclohexyloxy)ethyloxy]hydroxyphosphinyloxy}ethyl}-1-methylmorpholinium inner salt.

21. (Previously presented) A pharmaceutical composition consisting of a compound of claim 1 and a pharmaceutically acceptable carrier.

22. (Previously presented) A method of treating leishmaniasis, trypanosomiasis, malaria, toxoplasmosis, babesiosis, amoebic dysentery and lamblasis in an individual or animal in need of treatment, comprising administering an effective amount of a compound of claim 1.

23. (cancelled)